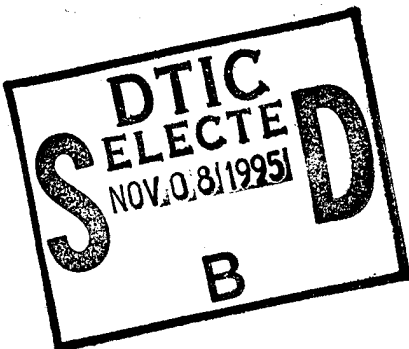


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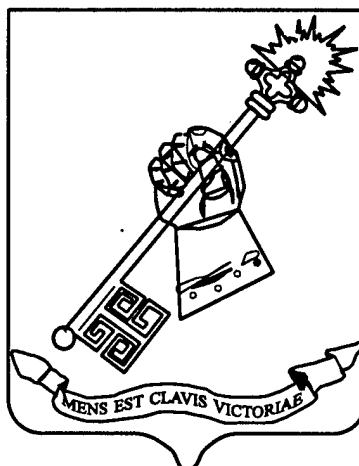
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MOUT ART OPERATIONAL PLANNING CONSIDERATIONS FOR MOUT

A Monograph
By
Major Charles A. Preysler
Infantry



School of Advanced Military Studies
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ABSTRACT

This study considers whether there are specific operational level considerations for conducting offensive urban operations. A survey of the last several conflicts indicate the importance of cities. A worldwide trend toward urbanization and a realization that many cities are key or decisive to the attainment of operational or strategic objectives leads one to the conclusion that future military operations will involve the use of force or forces in an urban area. Despite the importance and likelihood of urban conflict, Army tactical doctrine continues to emphasize the avoidance of conducting MOUT. The facts suggest that avoiding built-up areas is no longer practical. Clearly, the U.S. must be prepared to fight this type of unavoidable combat. The American public demands that the U.S. conduct campaigns that result in quick, decisive victory at a low cost. The U.S. can reduce the costs, but cannot eliminate the costs totally. This paper then examines current doctrine for Military Operations on Urban Terrain (MOUT). Two historical reviews serve as examples of urban combat at the operational level. These historical trends are next compared with existing MOUT doctrine to assess its sufficiency. The study concludes with recommendations for operational planners to consider when developing campaign plans that involve urban operations.

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I - INTRODUCTION

A survey of the last several conflicts in which the U.S. committed its military power indicate the importance of cities. Panama City and Colon were major objectives in Operation Just Cause. Kuwait City and Baghdad figured prominently in the Gulf War. Mogadishu was the center of activity in Somalia. Recently, Port-Au-Prince and Cape Haitian were key to the intervention in Haiti. A worldwide trend toward urbanization and a realization that many cities are key or decisive to the attainment of operational or strategic objectives leads one to the conclusion that future military operations will involve the use of force or forces in an urban area. Despite the importance and likelihood of urban conflict, Army tactical doctrine continues to emphasize the avoidance of fighting in built-up areas. The facts suggest that avoiding built-up areas is no longer practical. Future enemies will seek to use the intrinsic strength of the defense in a city to gain an advantage over an attacking superior force. Clearly, the U.S. must be prepared to fight this type of unavoidable combat.

The U.S. military is now a power projection force and is no longer constrained by the strategy of containment. American public opinion and its subsequent impact on political will are crucial to when and how U.S. military forces are committed in combat. The American public demands that the U.S. conduct campaigns that result in quick, decisive victory at a low cost. The U.S. military culture is steeped in the use of overwhelming firepower that causes massive destruction. Historically, this approach to fighting in cities has proven to be successful. However, contemporary trends in urban combat indicate that a more judicious and precise application of combat may provide

longer term success. This creates a tension between keeping a conflict at a low cost and the use of overwhelming firepower.

This study considers whether there are specific operational level considerations for conducting offensive urban operations. The paper then examines current doctrine for Military Operations on Urban Terrain (MOUT) to establish the baseline for the current U.S. view of urban combat. Two historical reviews serve as examples of urban combat at the operational level and highlight an evolution in ways and means to attack a city. The evolving trends highlighted by analyzing two historical case studies to identify useful patterns that an operational planner can use to design a campaign plan. These historical trends are next compared with existing MOUT doctrine to assess its sufficiency. The analysis considers only offensive MOUT operations to provide focus to the paper. The study concludes with recommendations for operational planners to consider when developing campaign plans that involve urban operations.

II - THE MOUT ENVIRONMENT

Urban warfare presents a challenging environment to a military organization and its soldiers. Understanding the complexities of these factors and how they affect operational level planning is crucial to developing a successful campaign plan that results in victory. "Mastering environmental dimensions is vital to survival on the battlefield."¹ Mastering the MOUT environment is especially crucial in light of the explosive growth in urbanization.

The increase in urbanization is one of the main reasons the U.S. faces an increased

likelihood of fighting in an urban environment. "The world's growing human population, coupled with its migration to the cities, is resulting in a rapidly expanding urban sprawl manifested worldwide."² Urban population data suggests this trend of constant growth will continue. "Some estimates forecast that 75% of the world will live in urban areas by the year 2000."³ The growth in size of urban areas is greatest in developing countries where the U.S. has a growing national interest at stake. The increase in the size of urban areas and the migration into these areas from the countryside increases the likelihood of urban combat.

Urban terrain is unique in that it is the only type of terrain that is rapidly expanding. There are no new mountains, jungles, deserts, or cold weather regions. Traditional open battlegrounds are disappearing, overcome by expanding urban complexes, especially in Western Europe and mainland Asia. Large continuous urban complexes--like Rhein-Main in Germany, are a serious obstacle to maneuver and drastically reduce open maneuver space. The ability to conduct wide-sweeping maneuvers around these complexes is steadily decreasing. Bypassing and isolating urban areas is no longer easily executed. Large scale operations will force elements to attack through cities which incurs a high cost in terms of time and casualties. Cities not only encroach on open maneuver space, but often occupy positions that require their seizure for religious, political, or economic reasons.⁴

The strategic importance of cities is well established by the numerous battles fought for their control. "History has shown that a basic imperative has been the capturing of capitals and other key strategic cities."⁵ In many Third World countries, the overthrow

of a government will most likely occur in the capital and not in the countryside. "In most Middle East countries control of a single city is universally seen as control of the country."⁶ This fact makes cities a source of power. A city located near the seacoast is a potential strategic objective simply due to its geographical location. Most ports and major airports are in major cities, making control over them vital for long term sustainment of a campaign. Cities contain the centers of political power, cultural and historical importance. Cities are also the hubs of transportation, hubs of telecommunications and centers for logistical support. Nations will expend significant resources to preserve their cities that are centers of power. This fact may make an operation in a city critical to the strategic outcome of a campaign or major operations.

A city offers the defender unique advantages. A well-planned defense, even if cut off from reinforcements and lacking sophisticated weapons, can consume a large amount of the attacker's time. The defender can also inflict an inordinate amount of casualties on the attacker. Consequently, enemies will very likely use the intrinsic strength of the defense in a city when attacked by superior forces. "Urban terrain is a great equalizer."⁷ Future opponents will realize the futility of direct confrontation with the superior forces of the U.S., especially when operating in open terrain. Future opponents may attempt to degrade our technological advantages by slowing the tempo, disrupting timing and creating casualties. An enemy defending in an urban area may create chaos with our operational and tactical plans. "It would be unwise to believe that future adversaries will not use every opportunity to equal the playing field by choosing the terrain which exacts the most terrible casualties and neutralizes the greatest number of advanced weapon

systems."⁸ Therefore, U.S. commanders must understand how an urban environment affects their technological superior combat power.

History illustrates that urban battles are the most demanding, costly and complicated of military operations. There are three reasons why MOUT is so difficult: the cost in time, manpower, and resources; the density of the terrain; and the presence of noncombatants in the battle space.

There is a significant expenditure of time, manpower and material when attacking or defending in a city. Urban battles consume time above all else, especially for the attacking forces. The attacker's tempo is slowed. A few well-placed snipers can delay a sizable force and can inflict a disproportionate toll on the attackers. Attacking within a city is a slow, methodical, and painful process. History shows that only three factors help maintain tempo and shorten the duration of urban combat, these include surprise, effective isolation of the enemy, and overwhelming superiority. Surprise and isolation are not simple tasks given the increased size and density of modern cities. Achieving overwhelming superiority is becoming more difficult in the current period of U.S. military drawdown. Urban combat may quickly use up the reduced resources of the U.S. Army.

Urban operations are typically resource intensive. The logistical problems in a city are manifested in the higher consumption of all classes of supply, especially ammunition.⁹ Resupply of forces in urban terrain is more difficult due to the decentralized nature of combat and to rubble blocking the streets. Additionally, the increase in the casualty rate when fighting in an urban environment can reach six times the normal rate for combat.¹⁰ Another consideration is the increase in the psychological strain of soldiers in fighting in a

city. The increase in psychological casualties is due to the feeling of isolation and the stress of danger potentially at every corner. Isolation of units and soldiers increases as the scale and the density of the urban area increases.

Urban environments are often dense and compartmentalized. Unlike the deserts, forests, and other terrain that confront the commander with a limited variety of fairly uniform, recurring terrain features, the urban battlefield is an ever-changing mix of natural and manmade features.¹¹ The urban environment is closed terrain where manmade structures diminish technological advantages. This is a potentially advantageous battlefield for a future opponent who seeks to negate the U.S. overwhelming superiority in sophisticated technology. Every nation on earth has urban areas or major cities that are potential battlefields. Cities are essentially urban jungles. General DePuy summed up the conditions of urban terrain by drawing a partial analogy to the jungles of Vietnam.

The visibility is poor--the terrain compartments are small and require an excessive amount of troops operating under junior leaders--the enemy is hard to find--it's difficult to contain him--it's hard to mount a counterattack--there is no high ground.¹²

One significant difference between the jungle environment and urban terrain is the large number of civilians in a city. The presence of a city's inhabitants complicates urban operations exponentially.

The continuous presence of noncombatants makes urban operations much more difficult. History shows that in every urban battle many noncombatants remain in the area. In the battle for Manila, "one perfectly executed attack was stopped in its tracks by masses of noncombatants fleeing the battle."¹³ The population may simply get in the way of

military operations even if they are friendly toward the attacking force. A hostile city's population creates a serious security problem for the attacking force. When conducting an urban attack with little regard to noncombatants, they may become alienated and hostile during or immediately following the operation. Noncombatant casualties have to be a concern because of their impact on operational and strategic goals. Requirements for noncombatant generally create a massive logistic burden for the victors. The civilians compete for military resources, especially in medical support. Efforts to restore food, water, electricity, fire, police, and sanitation services require the intense work of specially qualified personnel. In today's modern city, the restoration of vital services like computer networks, telephone systems, TV, and radio stations is a prime concern.

In urban combat, airfields, ports, subways, bridges, hospitals, TV stations and other key facilities become more crucial, though they may not offer a tactical advantage. Protecting and restoring vital infrastructure is a key concern for the attacker. The ability of the attacker to use the infrastructure eases the logistics burden and, at the same time, may deny the defender the same resources. Traditionally, high ground was considered key terrain and therefore, an important objective. In urban combat the city itself is dominate terrain. "There is value attached to the city far above the physical geography."¹⁴ The shear scale and density of a city affects the tempo of operations.

Urban terrain is an obstacle to movement and maneuver and thus affects the tempo of operations. Although paved roads provide mobility to any part of the city they also channelize movement and sometimes completely block vehicular movement when there is large rubble. The city presents a challenge to navigation especially when using standard

1:50,000 military map, which does not portray the inner city with sufficient detail.

Another significant challenge is the bridge/road load capacity that may not support the movement of modern armored vehicles. Urban terrain adds a third dimension to combat by providing underground cover and mobility with sewers and basements. The city's manmade structures provide artificial, but effective, cover and concealment. Multi-story buildings provide ready-made platforms for observation and fire with good cover and concealment. A defender can easily transform a city into a dense fortified area that restricts seeing and concentrating forces on the battlefield. The level of defensive preparation is a crucial planning factor for an attacker.

Other planning considerations for both the attacker and defender include fire hazards, limited line of sight, magnetic disorientation from power lines, interruption of tactical radio communications, and radar degradation. Added to these concerns is a reduction in weapons effectiveness in the urban environment.¹⁵ The density of the terrain affects weapon systems by reducing ranges for engagements and making target acquisition more difficult. This degradation of weapon effectiveness reinforces the widely-held recognition that the urban battleground is the domain of the infantryman. This helps explain why most Army MOUT doctrine is written with an infantryman's perspective.

III - CURRENT MOUT DOCTRINE

The keystone for all Army doctrine is embedded in the 1993 version of FM 100-5 Operations. It captures the American approach to warfighting which calls for decisive victory at minimum cost. This premise sets the tone for U.S. doctrine and the conduct of

campaigns. Deeply rooted in the American way of war is the "special relationship" between the government, the people and the military. American public opinion and its subsequent impact on political will are crucial to the commitment of U.S. military forces in combat. FM 100-5 clearly recognizes the importance of American public support.

The national attitudes affect the nature and employment of U.S. armed forces . . . The people of the United States do not take the commitment of their armed forces lightly . . . moreover the people expect the military to accomplish its missions in compliance with national values . . . They expect victory and abhor unnecessary casualties . . . They reserve the right to reconsider their support.¹⁶

The American public decides if military actions taken are appropriate. Often American public support will not tolerate the gross loss of life or massive collateral damage. "The American people expect decisive victory and abhor unnecessary casualties."¹⁷ They prefer quick resolutions to conflicts over a protracted one. They reserve the right to reconsider their support should any of these conditions not be met.¹⁸

FM 100-5 provides authoritative, relevant, adaptable guidance that is effective in all conditions. One of those conditions is operating in an urban environment. FM 100-5 introduces urban operations in a single paragraph in the chapter titled, The Environment of Combat.

Urban operations present unique and complex challenges to the Army forces. Urban operations can occur in any of the geographical environments. They can constrain technological advantages; they impact on battle tempo; they force units to fight as small, decentralized elements; they also create difficult moral dilemmas due to the proximity of large numbers of civilians. Commanders must enforce discipline in their operations to minimize unnecessary collateral damage and civilian casualties.¹⁹

Subordinate to FM 100-5 is the Army's doctrine for urban operations FM 90-10, Military Operations in Urban Terrain (MOUT). FM 90-10 defines MOUT as follows.

Military operations on urbanized terrain include all military actions that are planned and conducted on a terrain complex where manmade construction impacts on the tactical options available to the commander.²⁰

This manual was last published in 1979, and supports the 1976 Active Defense doctrine. Its thrust is high-intensity war, exclusively for a European conflict with a Soviet threat of conventional mechanized maneuver warfare. FM 90-10, outlines the Soviet's model for defending in an urban area. This includes a detailed sketch of Soviet defensive organization. The manual provides an example of how a corps might conduct an offensive MOUT battle in Central Europe against the Soviet urban defense model. It addresses other urban areas around the world by applying the Central European model with minor modification.

FM 90-10 is written from an open maneuver warfare perspective. It states that basic doctrine does not change when conducting MOUT. Just as in open maneuver warfare, the aim of the offense is to seize terrain through fire and movement. However, the philosophy of attacking an urban area is to avoid them whenever possible to preserve the momentum of the offensive. Doctrine suggests bypassing cities when conducting offensive operations. It advises attacking only when absolutely necessary and seeks to retain the momentum of the attack using mobility, shock action, and massed firepower. Urban areas are obstacles to avenues of advance. "These manmade elements of urban sprawl must be viewed as terrain and as obstacles to maneuver."²¹ The defender will use

the obstacle potential of built-up areas to slow, block, and canalize the attacker.

Therefore, FM 90-10 advises that a commander in the offensive should attempt to isolate and bypass built-up areas to neutralize the defender's advantage. The urban environment requires special consideration, but one in which basic principles are still valid. The special consideration is the adding of urban sprawl to basic doctrine.

Doctrine treats MOUT as a variety of terrain. FM 90-10 views MOUT from two perspectives. The first, from the brigade and higher echelons, focused on urban sprawl. The second, from the battalion and lower echelons, focuses on a homogeneous piece of terrain. "Commanders at brigade and higher levels must treat the elements of urban sprawl as terrain and know how this terrain affects the tactical options, the capabilities of their units and weapons."²² FM 90-10 does emphasize that urban characteristics will have a decisive influence on planning and execution of operations. Commanders must be flexible and prepared to fight on terrain constantly modified by man. The emphasis is on terrain manifested by categorizing cities by their size.

1. Large cities - Echelons Above Corps (EAC)
2. Towns/Small Cities - Corps and Divisions
3. Villages - Brigades down to companies
4. Strip areas - Company teams

FM 90-10 identifies critical conditions for conducting MOUT. The large urban areas usually contain major wealth and power centers whose possession or control can give one side an advantage over the other. "The denial or capture of these centers may yield decisive psychological advantages that frequently determine the success or failure of the larger conflict."²³ The manual lists four reason for attacking an urban area:

- To gain critical objectives
- To rupture the defense
- To facilitate future operations
- To deal the enemy a decisive psychological blow

The key to MOUT is understanding the characteristics of an urban area and how they impact on two aspects of warfighting -- mobility and weapons effectiveness. Both aspects play an essential role in either of the two forms of attack discussed in FM 90-10. The two forms are hasty and deliberate attack. Conducting a hasty attack before the enemy establishes a strong defense maintains the momentum of the offense. The aim of the hasty attack is the rapid seizure of the objective area. When the enemy is well prepared and rapid seizure is not possible, a deliberate attack is necessary. The deliberate attack has three phases: isolation, assault, and clear. The six fundamentals of the offense taken from the 1973 version of FM 100-5 are planning guides for MOUT offensive operations.

1. See the battlefield
2. Concentrate overwhelming combat power
3. Suppress enemy defensive fires
4. Shock, overwhelm, and destroy the enemy
5. Attack the enemy rear
6. Provide continuous mobile support

The decision to fight in an urban complex may cause massive damage and destruction. A commander can expect the imposition of constraints by higher authority designed to minimize collateral damage. He can also expect the presence of civilians to not only hamper, but restrict, his options in combat operations. Further, the problem of providing essential services to civilians places a tremendous drain on military resources

and manpower. Also, a hostile population presents a security problem for the military force operating in the city. In the end, "success may well be measured by how we accomplish our mission while minimizing destruction of buildings and alienation of the population."²⁴

MOUT doctrine fits into the larger framework of Army tactical doctrine and can be summarized as follows. Doctrine treats urban areas as a variety of terrain. The urban combat environment requires special techniques and considerations, but the basic principles hold true. To maintain momentum, a city is isolated and bypassed, if possible, rather than risking a time consuming and costly battle in this exacting environment. If a force has to attack through a city, the aim is to rapidly seize small vital objectives. A deliberate attack is necessary if the rapid seizure of a city is not possible. The deliberate attack has three key elements; isolation of the city, assault to secure a foothold, and systematic clearing. U.S. doctrine evolved from U.S. experience in WWII. Very little has fundamentally changed since then.

IV - HISTORY

Of particular interest to this study is the growing urban combat experience of American military forces. Forty percent of all combat in WWII was urban. The U.S. fought intense urban battles for several major cities like Cherbourg, Aachen, and Cologne. The American urban combat experience continued after WWII in such cities as Seoul, Panama City (1964) Hue, Saigon, Santo Domingo, Kontum, Beirut, Panama City (1989), Colon, Kuwait City, Baghdad, Mogadishu, and Port-Au-Prince.

Two historical examples highlight the application and evolving trends of U.S.

urban doctrine. The first example is the WWII battle for Manila, a part of the Philippine campaign. This battle serves as the model for a classic offensive urban operation in an unlimited war. Much of the U.S. experience in Manila illustrates the nature of modern urban warfare. The battle for Manila provides an example of the tension between the use of massive firepower and the attempt to restrict the amount of destruction. It also highlights operational considerations of an urban battle.

The second historical example is Operation JUST CAUSE, the 1989 invasion of Panama. Operation JUST CAUSE also provides a recent example of the current trend in urban combat. This trend restricts the use of force, requiring precision fires to minimize collateral damage and casualties. Both the battle for Manila and Operation JUST CAUSE illustrate the difficulty in conducting urban operations and the need to have forces ready to expertly execute combat in an urban environment.

MANILA - MOUT IN THE CLASSIC UNLIMITED WAR²⁵

The battle for Manila was a part of the Philippine Campaign, which fit into the overall strategy to support the attack into the heart of the Japanese home islands. The Philippines were also important as a staging base for the continuation of the U.S. offensive against Japan. The battle for Manila was a unique battle in that it involved for the first time an American multidivisional attack against the Japanese in a major city in the Pacific theater.

U.S. forces landed on the island of Luzon by the end of January 1945. After moving inland, the attention of U.S. commanders turned to the liberation of the capital city of Manila, the most important objective on the island. At that time, the greater Manila

area extended 285 square kilometers and contained a population of 1,100,000. The Americans needed the port of Manila to supply the Philippine Campaign and to continue their overall campaign against the Japanese home island. Manila was also politically important as the capital of an allied nation and a symbol of American commitment to return. This was especially important to General Douglas MacArthur, who had a personal fondness for Manila and thus became impatient for its reoccupation.

The U.S. Sixth Army was the main maneuver headquarters in charge of the Luzon campaign, but failed to plan for attacking Manila. Contrary to American intelligence estimates, Manila was heavily defended. "The U.S. suffered a major intelligence setback by not detecting the enemy defending in Manila."²⁶ The Japanese naval commander, (independent of Army control) decided to defend Manila. The forces defending Manila numbered 17,000 men and consisting largely of naval personnel, untrained for ground combat. MacArthur and the other U.S. commanders realized the city was heavily defended only as U.S. forces reached the outskirts. Although there was no designated operation for attacking the city in the campaign plan, key objectives were quickly identified. Operational objectives included securing the airfield and the port to support follow-on Allied operations. Seizing water facilities and power stations in order to sustain over a million Filipinos living in Manila was paramount. Additionally, U.S. intelligence confirmed the location of the Allied prisoners held in Manila. It was rumored that, unless freed, the Japanese would kill them as the Americans closed in. This resulted in an immediate high priority mission to secure the release of the POWs. General MacArthur dispatched elements of the 1st Cavalry Division to form a "flying column" to free the

prisoners quickly. The 1st Cavalry Division secured the prisoner's release, but did not have the strength to continue the attack into Manila. They defended in place until the remainder of the XIV Corps moved up.

The XIV U.S. Corps (consisting of 1st Cavalry, the 37th Infantry Division, and the 11th Airborne Division) surprised the Japanese when they entered the city from an unexpected direction. Initial resistance was light and easily overcome with tank and artillery fires. By February 10, the 1st Cavalry Division cleared the northern and eastern suburbs and secured one of the primary objectives-- the water facilities. General MacArthur had a growing concern with the amount of destruction caused to the city by the massive use of American firepower. To minimize civilian casualties and collateral damage, General MacArthur placed constraints on the use of firepower. Air attacks were forbidden and artillery could only fire against observed pinpoint targets. This consideration for the civilian population guided U.S. tactical operations throughout the battle.

In order to finish clearing the city, the two divisions conducted a crossing of the Pasig River that geographically splits the city. On February 7, the 37th Division assaulted across the river in rubber boats and amphibious tractors. The 1st Cavalry Division crossed the Pasig River on February 9 and 10. The limitations placed on artillery fires changed as Japanese resistance stiffened and American casualties increased. However, the air support restriction remained throughout the battle. Meanwhile, the 11th Airborne Division completed the isolation of the city by capturing Nichols airfield south of the city.

The remaining fighting became focused on reducing the Japanese strongpoints

around one major multistory building surrounded by clusters of other defended buildings. Major strongpoints included the stadium complex, Manila Hotel, New Police Station, City Hall, Post Office, and the university-hospital complex.²⁷ Fighting to reduce and clear the strongpoints took from four to ten days each to clear. By this time U.S. and Filipino civilian casualties mounted. Nonbattle casualties such as heat exhaustion also took their toll. In addition Japanese forces began to commit widespread atrocities that increased as their command and control disintegrated. This urged the U.S. to increase their tempo.

The last Japanese resistance held on to the old Spanish fortified walled city called Intermuros. Heavy artillery, including two 240mm and four 8-inch (203mm) howitzers, concentrated on breaching the 40 feet thick north and east walls of Intermuros. Additional artillery concentrations supported the final assault and clearing operations. The Japanese lost 1,000-2,000 killed with only 25 defenders taken prisoner. The U.S. lost 25 killed and 265 wounded. This disparity in casualties reflects the effectiveness of the artillery bombardment.

Some important lessons learned in this battle are relevant to today's urban operations. The attack on Manila showed poor planning, a complete intelligence failure, isolation of the city late in the battle, a failed attempt to restrict the use of firepower, and the lack of operational surprise. The cost of these errors resulted in the failure to attain the operational objectives, the seizure of the airfield and port facilities, intact. The price for not understanding the nature of urban combat cost the U.S. in terms of casualties and time.

The American campaign on Luzon exhibited poor planning by neglecting Manila as the main effort. The city of Manila had military and political significance as an Allied

capital and as a major port city. Manila was the scene of a humiliating American defeat three years earlier and there were hundreds of Allied prisoners of war held inside the city. Additionally, there was a lack of vision toward attainment of the operational objectives. The campaign plan called for securing a staging base for the investment of Japan as the operational objective.²⁸ The tactical endstate was to secure Luzon. Thus, Manila was the key to achieving both operational and tactical endstates. Yet, no plan for attacking the city of Manila was incorporated into the campaign. This illustrates the lack of linkage between operational and tactical levels of war. The overwhelming reason for this poor planning was the intelligence failure.

The American intelligence system completely failed to identify the level of enemy defensive preparation in the city. The conventional thinking of the time was that Manila would be declared an "open" city like Paris was in Europe. However, the Japanese decision to defend the city, thus controlling the port and airfield, made attacking it necessary. Bypassing the city was not an option because the airfield and port would still be under Japanese control. The intelligence failure started with MacArthur's staff at Southwest Pacific Area (SWPA) and continued down to the corps staff. "Without an understanding of the enemy's likely course of action, planning for the battle of Manila, within the framework of the Luzon campaign, was "uncontrolled."²⁹

The battle for Manila illustrates the tension between the use of overwhelming firepower, acceptable level of casualties, and the time spent securing the city. The effects of American firepower in the initial clearing of the city's north side were evident in U.S. losses of only 50 dead and 150 wounded. In contrast, the Japanese lost 1,500 killed in

fighting on the north side of the city. MacArthur's restrictions on firepower raised the number of casualties during the fighting around the main defense on the south side of the city. As the casualties grew, MacArthur's relaxed the restrictions on artillery, but not air. This persistence of restricting firepower made increasingly little sense as artillery alone proceeded to devastate the city.

The cost of the battle for Manila in terms of lives lost was high. The destruction of the city and the death of over 100, 000 Filipinos diminished the eventual U.S. victory. U.S. doctrine, combined with American military culture and the experience of the past three years of the war reinforced the practice of using overwhelming fire support, both air and artillery, as the critical component to successful ground operations. With the need to restrict firepower, the U.S. forces were left with a dilemma of attacking without overwhelming firepower, thus causing higher friendly casualties. Further, doctrine treated attacking a city in the same manner as the reduction of a fortified area. There was little discussion in doctrine about the distinction between attacking field fortifications versus a city defended by the enemy filled with civilians.³⁰

The U.S. failed to achieve the element of surprise though they landed on the opposite side of the island. The Japanese knew of the American landing and their slow push across the island toward Manila. The only surprise the U.S. achieved was a brief tactical surprise by the direction and the timing of the initial U.S. attack on the north side of Manila. The Japanese expected the Americans to take two additional weeks to reach the city and expected them to attack from the south. This had very little effect in terms of the overall battle, as the Japanese had developed a strong intercity defensive plan. In fact,

U.S. forces were actually more surprised than the Japanese due to their poor intelligence about the level of defensive preparation.

Another key consideration when attacking the city is to isolate the defender. In large part, the Japanese isolated themselves by not planning for a cohesive defense between the Army forces in the mountains and the Japanese naval forces in the city. However, the Americans did make an effort to complete the isolation of the city with ground forces. The U.S. isolated the entire island through the overwhelming strength of American air and naval power.

The American failures to adequately execute the vital points discussed above resulted in their inability to secure the operational objectives intact. The destruction of the port and airfield left them useless for several months, thereby disrupting the overall campaign plan. Further, the lack of quick decisive planning and execution left Manila's power plant, major hospital, and water distribution system severely damaged. This created a massive logistics problem for U.S. forces for months after as they tried to sustain the large population of Filipinos living in Manila.

The eventual cost of the battle was high in casualties and lost time. It took XIV Corps one month and cost 1,010 killed and 5,565 wounded to secure Manila. Japanese casualties numbered about 16,000 men killed in and around the city. Also, an estimated 100,000 Filipinos lost their lives and their city lay largely destroyed by the massive firepower used to root out the Japanese defenders.³¹ The nature of urban combat and poor execution by the American forces ensured a slow, costly battle to seize the city.

The next historical example involves modern U.S. forces using operational art to

seize a major city quickly and at a low cost. Operation JUST CAUSE the invasion of Panama demonstrates the trend toward simultaneous and overwhelming force tempered by the desire to minimize casualties and collateral damage.

JUST CAUSE - PANAMA (SIMULTANEOUS ATTACK/COUP DE MAIN)

The U.S. began planning for the Panama contingency as early as 1988. During an abortive coup attempt the previous October, the PDF demonstrated an ability to rapidly reinforce key sites in Panama City. As a result, the planners realized the most effective means of fighting would be to strike multiple objectives simultaneously. The resultant plan detailed the requirement to neutralize 27 PDF objectives simultaneously. On 15 December 1989, the National Assembly of Panama declared that a state of war existed with the U.S. On 16 December 1989, members of the PDF killed a U.S. Marine lieutenant and assaulted and abused another U.S. officer and his wife.³² This was the trigger that launched the U.S. invasion of Panama with the campaign objectives to:

- Protect U.S. lives and key sites and facilities.
- Capture and deliver Noriega to competent authority.
- Neutralize PDF forces.
- Neutralize PDF command and control.
- Support establishment of a U.S.-recognized government in Panama.
- Restructure the PDF.³³

The mission concept was to conduct a *coup de main* by simultaneously attacking multiple targets to overwhelm the Panamanian forces. This intent was to make any resistance seem futile and thereby, prevent further needless struggling. This complex plan made for many "moving parts" with most of the combat centered in the cities of Panama. The U.S. force consisted of 23,000 men organized into several task forces (TF) combining

heavy, light and with special operations forces. The bulk of the combat force consisted of the 82d Airborne Division and the 7th Infantry Division (Light). Also providing significant combat power was the 193d Infantry Brigade with a mechanized battalion from the 5th Infantry Division (Mechanized). Additionally, there were numerous SOF forces and other support units operating throughout the conflict.³⁴ One such unit was the 75th Ranger Regiment.

One of the first objectives was to secure Tocumen PDF Airport/Torrijos International Airport and Rio Hato and neutralize the three PDF companies protecting them. This task went to elements of the 75th Ranger Regiment which conducted an airborne assault. Rangers went in "weapons tight" meaning a soldier could not fire unless fired upon. This was necessary as several hundred foreign travelers found themselves caught in the airport as the Rangers assaulted their objectives.

The 82d Abn Div conducted a follow-on parachute assault on Torrijos airport 45 minutes after the Rangers. After assembling, the division immediately conducted three battalion size air assaults to seize, isolate, and neutralize PDF forces at Panama Viejo, Tinajitas and Fort Cimarron. This would deny PDF reinforcement of Panama City. While these operations were still ongoing, the battalion at Panama Viejo received orders to go down into Panama City to the Marriott Hotel and rescue civilians trapped by the PDF. A total of 29 American civilians were secured and evacuated by armored convoy.

The mission of the 193d Inf Bde, the force permanently stationed in Panama, was to isolate and clear the Commandancia, (the center of Noriega's power and headquarters for the PDF). Other missions assigned to the 193d Inf Bde included seizing and securing

the PDF barracks at Fort Amador and protecting the U.S. housing at Fort Amador. The brigade consisted of one airborne, one light infantry, and one mechanized infantry battalion with Sheridan tanks. A Sheridan tank commander recounts the precision and ROE used by his forces.

ROE were very precise, the task force commander had to approve Sheridan main gun fire because Team Armor would be firing over, and in close proximity to friendly forces. Crews must avoid fratricide at all cost and keep damage to non-military areas to a minimum. ...In accordance with "measured response" criteria, PDF refusal was met by Sheridan firing one or two rounds into each structure to neutralize enemy positions.³⁵

Another difficult task assigned to the 193d Inf Bde was the seizing of the PDF barracks at Fort Amador. An American housing area surrounded the PDF barracks at Fort Amador, requiring precise control of fires to prevent American civilian casualties. Two infantry companies air assaulted into a hot landing zone on the Fort's golf course. A psychological operations (PSYOP) team began broadcasting surrender appeals, but the PDF ignored them. U.S. forces conducted a firepower demonstration into the empty mess hall to convince the PDF to give up. Some PDF gave up while others continued to resist. The remaining resistance ended with an assault on the remaining PDF-held buildings. The soldiers used discipline, precision, and force only when necessary to prevent any of the surrounding Americans in the housing area from being hurt.³⁶

A brigade from the 7th Inf Div secured Panama City, which contains 1.2 million people. This brigade fought in 21 separate engagements against snipers and squad size elements, the PDF while clearing and securing the city. Additionally, the brigade was

responsible for the security and isolation of the American, Cuban, Libyan, and Nicaraguan Embassies, and the new Panamanian government headquarters and offices. Damage to these sites potentially could have adversely affected world opinion concerning the operation.

TF Atlantic, composed of elements from the 7th Inf Div and the 193d Inf Bde, attacked nine H-hour targets spread over a 1,800 square kilometer area. The main targets were to secure and neutralize the PDF Naval Infantry Company at Coco Solo and the 8th PDF Company at Fort Espinar. Simultaneously, TF Atlantic isolated the port city of Colon, protected the Madden Dam, and other U.S. installations and property on the Atlantic side.³⁷ With these tasks accomplished, the last remaining PDF stronghold was the port city of Colon.

TF Atlantic shifted its emphasis to securing the city of Colon. An amphibious assault element with three rifle companies landed and cleared the eastern part of the city. Additionally, two companies advanced through sporadic sniper fire from the south. The ROE allowed the shooting of anyone armed, but U.S. soldiers were reluctant to shoot unless they felt they were in danger. This was part of the overall attitude of the soldiers to keep destruction to a minimum. This same attitude carried over into the stability operations, which immediately commenced. The intent of these operations was to restore law and order and to support the new government. This required soldiers to secure the water processing plants, electrical facilities, radio stations and food stores. The force also established control of the city streets through 24 hour patrols.

JUST CAUSE was not a simple operation to plan or execute, but detailed planning

provided the planners and executers with the opportunity to achieve a quick, decisive victory. Operation JUST CAUSE was a nonlinear battle conducted on multiple axes of attack using land, sea, and air forces. The only real criticism with this offensive urban operation was the lack of detailed planning for the post conflict phase. The lack of post conflict planning resulted in widespread looting after the main battle for the cities in Panama was over. Fortunately, this oversight did not prevent the U.S. from accomplishing its operational objectives. Operation JUST CAUSE met both its strategic and operational objectives.

The strategic objectives for Operation JUST CAUSE were to protect American lives, secure the Panama Canal and remove Noriega. These objectives translated into neutralizing the PDF. To accomplish these strategic aims U.S. planners developed three operational objectives. The first was force-oriented vice installation-oriented. This objective was the isolation and seizure of La Comandancia to disrupt PDF operations. The second objective was selected to facilitate future operations and neutralize PDF units. This was the seizure of the Tocumen-Torrijos Airport and neutralization of the 2d PDF company. The final operational objective was to facilitate future U.S. operations. An example was securing the Bridge of the Americas, on a key line of communication, in order to maintain tempo and freedom of maneuver. The plan called for all these objectives to be secured simultaneously. This would not have been possible if accurate intelligence was not collected.

The intelligence for this operation was very accurate, assisted by the forward presence of American forces in Panama for multiple decades. Many ground commanders

had the opportunity to conduct reconnaissance of their targets. U.S. forces conducted numerous rehearsals, some on actual objectives. The availability of accurate intelligence in large part was responsible for the quick victory. The only intelligence failure was the inability to track the movements of Noriega for a quick capture.

The U.S. maintained strategic and tactical surprise, but lost operational surprise. There was extensive news coverage of American forces preparing for combat at their bases in the U.S. However, the U.S. maintained the nature and the timing of the attack. The American forces caught the PDF forces off guard and quickly overwhelmed them. Despite determined resistance, the rapid securing of the objectives and the city was largely due to the effect of surprise achieved by an overwhelming American force.

The tension between destruction, minimizing casualties, and duration of the operation was all properly balanced throughout JUST CAUSE. This operation used combined arms task organization to demonstrate the presence and superiority of U.S. firepower. U.S. forces used combined arms to mass the effects of a superior force on the enemy's will to resist. This overwhelming force was simultaneously applied to critical areas to shorten the conflict and the number of casualties. This superior firepower provided a psychological effect on PDF forces attempting to resist. U.S. forces used firepower with relative precision and went to extraordinary lengths to avoid collateral damage. The use of artillery fired in the direct mode rather than the indirect mode, illustrated the use of precision fires. Another example was the Sheridan tanks adding their precision fires to persuade PDF forces to surrender, firing only when necessary to destroy those who did not. The operation effectively incorporated nonlethal assets such as

PSYOP, SF, and EW as force multipliers. The overall effect of this simultaneous application of combat power created a paralysis in the PDF response.

U.S. forces used the cordon and search method to isolate specific areas of the city. This type of isolation proved effective throughout the operation. The isolation of the entire city was impossible given its size of the city and size of the attacking forces. The cordon had to keep its focus narrow because there were not enough forces available. Isolation of a city will probably remain an economy of force mission in the future.

Operation JUST CAUSE was a quick decisive victory at a low cost. The operational campaign objectives were secured quickly. The PDF was effectively isolated and neutralized. Still, the operation had an inevitable human price. The casualties for the invasion were 23 U.S. soldiers and 3 American civilian KIAs; and 324 U.S soldiers WIAs. The PDF suffered 314 KIAs and approximately 112 WIAs. The operation caused a total of 202 Panamanian civilians wounded and left ten thousand homeless from the destruction wrought by massive firepower.³⁸ For the complexity and scale of the operation the casualties were remarkably low, but the failure of the U.S. to protect civilians and their property from looters tarnished the triumph.

These two examples of U.S. operations in urban environments highlight the cost and complexity of conducting urban warfare. Further, they illustrate the changes in the way the U.S. Army conducts urban operations. The use of unconstrained massive firepower resulting in massive destruction, high casualties and the month long duration of the battle characterizes the fighting in Manila. In Operation JUST CAUSE there was a demand for a quick decisive victory with minimum collateral damage and casualties to

both combatants and noncombatants. One key thread running through all these battle is the necessity to have solid doctrine and to train soldiers in that doctrine.

V ANALYSIS

Each urban battle is unique, but there are certain trends that remain constant. The constant growth in size and scope of urban areas is a significant trend that will force the U.S. to pay more attention to MOUT. The U.S. can no longer afford to look upon urban combat as warfare that is avoidable. The U.S. must recognize this point and shift away from current doctrine's emphasis on avoiding urban combat. Another significant trend is the demand on U.S. forces to win a decisive victory at minimum cost and as quickly as possible. The potential and likely future U.S. involvement in a costly and extended urban operation will clash with the demand for quick, decisive victory at a low cost. Several elements will influence how the U.S. will fight in future urban combat, especially against a capable defender.

One element which remains constant is the advantage afforded the defender in an urban area. The urban environment provides asymmetric forces an opportunity to fight a technologically superior force on roughly equal terms. The defender knows the terrain and can hide his forces within a city more readily than in any other terrain. The clutter created from manmade structures degrades the effectiveness of intelligence collecting sensors. The defender also has the advantage of building a defense using existing structures that provide excellent protection. Urban environments afford forces the ability to move in the city with a relative degree of protection from air and indirect fires. Forces can move

through buildings and underground in sewers and subways. Despite the defender's many advantages, history shows that the offense is still the dominate form of combat in an urban environment. Based on a U.S. Army Human Engineering study of 22 urban battles, the attacker won in sixteen of the battles, the defender won five times and one battle ended in a draw.³⁹

An attack on an urban area should focus on seizing operational objectives. To focus on anything other than operational objectives may squandering resources and increase the cost to the attacker. American forces attacking Manila did not focus on seizing the port and airfield. Instead, a general attack on a broad front to take the city ensued with the resulting high cost. The JUST CAUSE plan succeeded in minimizing cost by correctly focusing the attack on seizing the operational objectives. The differences between the two battles were the planning considerations. In order to successfully attack to secure operational objectives, planners must have a detailed plan, accurate intelligence, reasonable restrictions/constraints, be able to develop overwhelming superiority, be capable of isolating the urban area on multiple levels, obtain surprise and possess doctrine that provides the commander with an understanding of the nature of urban combat. Even with proper planning there is still an inevitable cost when conducting urban operations.

There are different ways to measure cost, but the most important measurement of cost is in terms of casualties and the duration of the combat. The traditional American way of reducing the cost is to use overwhelming firepower. Historically, the outcome of the use of massive firepower usually resulted in the destruction of large parts of the urban area and a high toll in noncombatant lives. Currently, the wholesale destruction wrought

by overwhelming firepower is contrary to the expectations of the American public and thus to the American approach to warfighting. The tension between minimizing cost and using overwhelming firepower is crucial to the outcome of urban combat. An examination of Manila, JUST CAUSE and current doctrine suggests that campaign planners need to take the following considerations into account when they develop operational plans involving an attack on an urban area.

ATTACK AIMED AT SECURING THE OPERATIONAL OBJECTIVES

Campaign design provides the vital link between strategy and tactics. A crucial task is to ascertain the strategic goals of the conflict and then translate them into operational objectives. Without this linkage, an attack on an urban area may be unwarranted and the cost too high. Therefore, the first question an operational planner must grapple with is whether attacking a city as part of the campaign is necessary. Current doctrine states that the Army should attack a city only as a last resort. A more realistic approach is to attack an urban area only if it is critical to the attainment of the operational objectives. This is a critical shift in the way the U.S. approaches MOUT.

Current MOUT doctrine suggests four reasons for attacking a city. The first is to gain critical objectives. Doctrine does not specify whether the critical objectives are operational or tactical objectives. Seizing operational objectives helps link tactical engagements to the attainment of the strategic goals. The second reason for attacking a city is to rupture the enemy's defense. Again, this is only important if it accomplishes the operational objectives. The third is to facilitate future operations. This is important for a campaign plan that links battles and major operations together to achieve an endstate.

With a force projection Army the infrastructure, especially ports and airfields, is key. A force projection army must rely on permissive ports of entry, or an airhead secured by forced entry. The location of most ports and airfields is in and around cities. This fact assures that cities are important to most future campaign plans. Cities control crucial lines of communication and transportation vital for operations and the sustainment of operations. A city's infrastructure can help provide for some sustainment requirements of a force that has to rely on bringing a large sustainment base. The fourth and final reason for attacking a city is to deal the enemy a decisive psychological blow. The key word is decisive. Without being decisive, a psychological blow is an insufficient reason to attack a city. Two other possible reasons for attacking a city are when the urban area is unavoidable or when the enemy force is too strong to bypass or ignore.

The battle for Manila and Operation JUST CAUSE combined several of these doctrinal reasons for attacking a city. Manila held the key objectives for controlling two vital installations, the airfield and the port, both crucial for follow-on operations. Their seizure would allow the Allies a support base from which they could attack the Japanese home islands and end the war. The failure to recognize Manila as the operational objective, controlling the airfields and the port, cost the Americans time and additional casualties. Manila was also a city that held significant symbolic importance, which dealt a psychological blow to the enemy.

Operation JUST CAUSE had specific operational objectives identified early in the planning process. Controlling the cities in Panama translated into controlling the country. The airfields and ports were important for moving forces into Panama for

subsequent missions. Additionally, most of the PDF forces were in or adjacent to cities. The successful attainment of tactical objectives led directly to the accomplishment of the operational objectives. Casualties were low and the operation proceeded with amazing speed. The forward deployed American forces certainly helped in accomplishing the mission. Securing the airfields and ports facilitated the attack of other key objectives. There was no other viable option.

DETAILED PLANNING

The need for detailed planning is not new to combat, but is vital to urban combat. A detailed plan helps in effective command and control, the integration of combined arms and in reducing friction caused by the nature of the urban environment. Detailed plans also contribute to surprise and isolation of the enemy. Manila is an example of what happens when a force tries to conduct an operation in a major urban battle without a detailed plan. Operation JUST CAUSE, on the other hand, clearly shows what is possible with a detailed plan. Several key factors to consider when planning for urban combat are city size, structure and composition, the population, and the infrastructure. Current MOUT doctrine does not address these detailed planning factors sufficiently.

The size of a city determines the forces required to isolate and attack it. A big city affords the defender the space to constantly harass and reorganize new defenses. The defender can use attrition to wear down the attacker's will. In large city battles, mini-battles within the main battle occur. In Manila, the fighting for the north side of the city was significantly different from the fighting inside the walls of the Intermoros section. In smaller cities the defender has little maneuver room to give up to the attacker's advance.

The defender cannot keep the attacker out indefinitely. Doctrine addresses city size by dividing cities into four categories, but does not address how this effects the planning of an attack.

The structure and composition of cities have a major impact on the operation. The type of construction, spacing between buildings, and pattern are primarily tactical considerations, but have operational impact. The strongest made buildings are normally key strongpoints for the defender. Much of the toughest fighting may occur in and around these buildings. This fact is important for planning if one of these strongpoints has a direct link to obtaining an operational objective. In Manila, the Japanese built their defense around the strongest buildings located in the southern part of the city that controlled the airfield and port. In Panama, the Commandancia was the PDF's headquarters building inside an American compound. Securing the Commandancia building was an important step toward attaining the operational objective of neutralizing PDF forces.

A city's infrastructure is a vital consideration for planners. The infrastructure may become invaluable for the attacker during and immediately following the attack. Doctrine overlooks the tremendous value a city's infrastructure can have for the attacker. A city's infrastructure can help reduce the logistics burden of a force projection Army by providing needed services that would otherwise have to be brought in. The destruction of a city's infrastructure may adversely affect the long term national interest by placing an economic, diplomatic, or military burden on the U.S. A city's population depends on infrastructure for life support items (food, water, shelter, and medical supplies).

The control of the population remains critical to operational planning because of its impact on both the military and the political success. If the population remains in the city they can interfere with the attack and drain precious resources. During the battle for Manila fleeing civilians halted one attack in midstream. The destruction of the water treatment plant during the battle meant that one million Filipinos had to rely on the U.S. to provide fresh water. In a slightly different twist, Operation JUST CAUSE planners had to concern themselves with protecting a large American population living in Panama. The protection of Americans living in Panama became an operational objective. The cultural and demographic makeup of a city's population directly impacts on any urban operation. In both Manila and in Panama, the population was friendly toward the U.S. forces. This may not always be the case in future urban combat. Current MOUT doctrine does not adequately address the impact of the population when planning or conducting an urban attack.

FM 90-10 also fails to adequately cover attacking a friendly city defended by the enemy. The effects of modern weapons on a friendly, but enemy-held city, is an important consideration. The civilian population appears to always lose more than either the defender or the attacker. If civilians are dying or losing their homes and livelihoods, they may switch their allegiance to support the enemy. Retaining or winning the support of the city's population is a vital concern to U.S. planners. Information about the population of a particular city is a requirement planners should insist on from their intelligence source.

ACCURATE INTELLIGENCE

Accurate intelligence concerning the level of the enemy's defensive preparations is

paramount to successfully attacking a city. The attacker must determine what the status of the city's defensive preparations is and what reinforcements may enter the city after the battle is in progress. Another key requirement is finding out what the level of the enemy's determination or will to fight is. The ability to collect intelligence is often more difficult in a city due to the nature of the terrain. The enemy can readily hide his defenses, logistics, and command and control structure in the maze of manmade structures. Movement is difficult to pick up because of masking from high buildings. In Panama most of the accurate intelligence was from HUMINT (Human Intelligence) sources and not from the sophisticated sensors like those used in Operation DESERT STORM. Manila amply demonstrates the impact of an intelligence failure on the outcome of an urban battle.

Well-motivated defenders who are intimately familiar with the urban area are at an advantage over the less informed attacker. This factor highlights the importance of timely intelligence. Even if a defender lacks superior firepower and sophisticated weapons, he can consume inordinate amounts of the attacker's time. If a defense is well prepared, a defender can put up stiff resistance without reinforcements. The battle for Manila highlights what a less sophisticated, but determined, defender can accomplish in a city. U.S. forces had solid information on the situation in Panama. This allowed them to execute a well-orchestrated show of overpowering force, exhaustively planned to quickly neutralize any resistance. In the end, the PDF had no chance to prepare a defense and were overwhelmed in a matter of hours. Current doctrine fails to address intelligence with the proper level of detail. The only statement made about intelligence in doctrine simply

advises the commander to "see the battlefield."⁴⁰ Accurate intelligence may help reduce the cost of fighting an urban battle.

THE COST

There is a cost involved with fighting in an urban environment. "Due to the political and economic repercussions and the cost in human life, the U.S. is extremely reluctant to commit forces for any reason".⁴¹ The trend for U.S. military involvement is to minimize collateral damage and casualties. This creates the tension between the doctrine emphasizing the use of massive firepower, which usually causes massive destruction; the need to minimize the cost in casualties; and the duration of combat. Often, the goal for U.S. forces is to recapture a nation as a whole and to preserve its infrastructure to allow reestablishment of legitimate government as quickly as possible. U.S. military commanders have to balance quick decisive victory while winning at the lowest cost in American soldiers lives versus the potential to inflict mass devastation upon a city and its inhabitants. Technology appears to offer some help in reducing the tension among the three factors.

Technology may provide one practical solution to the problem of rapidly defeating the enemy while minimizing casualties and collateral damage. The development of precision and nonlethal weapons may help U.S. forces conduct disciplined operations by attacking enemy forces intermixed with civilian noncombatants. Currently, the U.S. Army is firing standard weapons like artillery and tanks with precision to reduce collateral damage. In Operation JUST CAUSE restrictions imposed on Sheridan tanks and artillery pieces directed they fire in a direct firing mode with strict ROE. The U.S. is only now

realizing the full potential of precision weapons in urban combat. The Army is fielding weapons like the Barrett .50 cal. sniper rifle with thermal sight, laser guide munitions, nonlethal glue guns, and cruise missiles. Precision weapons are generally more effective and efficient, thereby reducing the time it takes to accomplish the mission.

The timing, and tempo of the attack are important considerations. There are two methods of offensive tempo in MOUT. The first is the traditional sequential seizure of sections of a city with clearing block by block, street by street as in the battle of Manila. This is what current doctrine describes as maintaining momentum. Operation JUST CAUSE used another method of increasing tempo by simultaneously seizing all the critical objectives, causing paralysis of the defender. Current MOUT doctrine does not address this type of tempo. As discussed earlier, the current trend is for the U.S. Army to have fewer forces available. This impacts on the ability to hit multiple targets simultaneously. The implication for the planner is the limitation of available forces to isolate and seize all the key targets simultaneously in an urban area. The key is to identify the most important objectives and attack them first. Current MOUT doctrine does not address the combination of sequential and simultaneous operational tempo.

CONSTRAINTS/RESTRICTIONS

Imposed constraints or limitations on the attacker may shift the advantage to the defender. To attack a city requires an examination of the aims or goals and the constraints and restraints that will allow the attack to succeed with minimum cost. An agreement on expectations between operational planners and the executers at the tactical level is important. "Strategic guidance will constrain operational methods by ruling out some

otherwise attractive alternatives."⁴² The defender may have an advantage in limited conflicts because of constraints imposed on the attacker. One study on MOUT concluded that if an attacker is subject to any major constraints, then the defender has a better chance to win. At a minimum the defender may prolong the battle and raise the cost for the attacker. Only when there is a general unlimited war, where the constraints are kept to a minimum, does the attacker regain the advantage.

The U.S. understands urban warfare in terms of conventional conflict, with its traditional and direct use of violence. Doctrine discusses concentrating overwhelming combat power to shock, overwhelm, and destroy the enemy. However, there is a movement toward less violent forms of conflict. This shift is a result of changing national priorities, threat assessment, and the changing world environment. The imposition of ROE will always be present in conflicts where the U.S. employs military force. The use of precision in maneuver and fire support applied in JUST CAUSE seems to provide the best approach to accomplish a constrained attack on an urban area. This does not suggest the U.S. should discard the traditional view of urban warfare altogether. There is still a need to have a doctrine for high intensity urban warfare. Nevertheless, the U.S. needs to develop more precision weapons and train soldiers in the disciplined use of those weapons.

OVERWHELMING SUPERIORITY

The size of an attacking force affects urban combat. The size of the attacking force in large part determines the ability to control a large city by physical presence. The larger the force, the more options for attacking. The defender must concentrate at key

points to win a temporary superiority. However, with a small force only the most critical objectives can be attacked. A small force cannot physically occupy large sections of the city. Physical occupation of a section of a city is one of the only ways to ensure control due to the relative ease with which forces can infiltrate at night back into cleared sectors. In Manila there was sufficient force to occupy large parts of the city simultaneously. In Panama, selective isolation and occupation was required because of the number and size of the cities and the size of the attacking force. An additional factor to consider when planning an urban attack is force ratio.

Force ratios seem to influence the duration of the fighting. One study of 22 urban battles concluded that a force ratio of 4:1 or greater helps reduce the duration of a battle by two weeks. In cases where the force ratio was 2:1, the fighting lasted up to four weeks.⁴³ Current MOUT doctrine discusses the problem of concentrate overwhelming combat power in an attack from the stand point of mobility. There is no other discussion of force ratios. With the current drawdown obtaining a favorable force ratio is more difficult. Isolation of an enemy defending a city may provide the attacker with the ability to achieve a favorable force ratio at the decisive points.

ISOLATION

Isolation at multiple levels is a key factor in reducing the duration of an urban attack. Time is always a precious commodity for U.S. commanders because of the impact on public will which does not tolerate protracted conflicts. If the defender is isolated from resupply and reinforcements, the battle will end sooner and may not be as difficult. Usually, longer battles result in more casualties which influences public opinion and will.

Isolation of a city can influence the defender's will to resist.

Isolating the enemy in a city helps reduce his will to continue the struggle. As in Operation JUST CAUSE, the simultaneous attack of multiple objectives effectively isolated the PDF. The enemy becomes paralyzed by numerous forces attacking multiple targets simultaneously. The effect of isolation on the enemy's spirit may create a feeling of hopelessness. The enemy sees continued struggle as futile. However, a highly motivated and indoctrinated defender may continue to resist in spite of isolation. Thus, isolation will impact on the available means a defender has to continue the fight. Even if the defender chooses to continue the fight, the attacker may easily overwhelm him. The Japanese forces defending Manila were not isolated until well into the attack. Once they were isolated, they began to experience a break down in the discipline of their soldiers as more incidences of atrocities occurred.

With the reduction in U.S. force levels, the classic isolation of an entire city is very difficult. In Manila there was sufficient force to physically isolate the Japanese defenders. The U.S. Army has precious few resources to physically surround a city. In the future only sectors of the city will be isolated. The priority should go to those sectors that contain the key objectives. Airpower can help reduce the size of the ground force dedicated to isolating a city.

Airspace control is just as vital in urban combat as it is in other combat environments. Air superiority is useful in isolating the city from approaching forces. Airpower can cut off and isolate a city on different levels including physically and psychologically. On the physical level, dropping bridges prevents resupply, reinforcement

or evacuation. In the battle for Manila air and naval forces isolated the Japanese defenders.

The psychological effects of airpower can aid in the timing of an attack. The psychological implications of air attacks are dependent on the character of the defending force and its perceptions and expectations. The greater the enemy surprise, the more impact an air attack has. The more the enemy is expecting victory, the more devastating air attacks are. Also, PSYOPS equipped aircraft attacks the defender's will to resist and can help control the city's population. Airpower can also attack a city directly by bombing and strafing targets if there are no constraints imposed. However, as suggested earlier, imposed constraints on firepower will also restrict airpower. With the advent of precision munitions, air may again have an important role in attacking a city.

FM 90-10 discusses isolation as a tactical measure. It addresses isolation as a phase of a deliberate attack. It neglects to discuss any broader issues of isolating a city and the impact it can have on an attack. MOUT doctrine should expand to include a discussion of multiple levels of isolation.

SURPRISE

Surprise at the tactical and operational levels can have a tremendous impact on the outcome of urban combat. The attacker has an advantage by determining the time and place of the attack. This was evident during the American advance on Manila. The American forces surprised the Japanese by the appearing from the unexpected direction and two weeks earlier than expected. Operation JUST CAUSE shows that the attacker

may lose operational surprise, but still have tactical or strategic surprise. In JUST CAUSE, tactical surprise helped the enemy feel like he was being overwhelmed. Surprise threw the PDF off balance and paralyzed their efforts to mount an effective response. The results of U.S. surprise in JUST CAUSE was a low casualty rate for all sides and a short duration of combat.

Doctrine does not address the effect surprise may have on an urban battle which is a major shortcoming. By achieving an element of surprise, the attacker can offset the defender's preparation of the defense. The defender has a much more difficult time surprising the enemy. The only way a defender can achieve surprise is if the attacker fails to collect accurate intelligence or through strong counterattacks.

VI CONCLUSION

Current trends suggest an increased likelihood of the U.S. military conducting urban operations in the future. Cities continue to be strategically, operationally and tactically important. The population explosion and subsequent migration to cities, especially in the Third World, are making urban warfare unavoidable. This expansion is a factor beyond U.S. control. Therefore, the U.S. Army cannot afford to look at urban combat as warfare that is avoidable. Ignoring the city as a likely future battlefield will leave the U.S. doctrine in a WWII paradigm. "If we accept that conflict with an enemy force at some level is likely within a major city, then political and military leaders must have a common understanding of the effects of military force in an urban environment."⁴⁴ If MOUT is unavoidable and inevitable, the U.S. must prepare for urban warfare.

Understanding the urban environment is a crucial first step. Urban combat remains one of the most challenging, complex, and costly operations confronting a military force. Potential U.S. opponents see urban terrain as the great equalizer. Vastly less skilled and equipped opponents have their best chance of success against the U.S. military when they operate in a city. Even in defeat they can still inflict significant damage on U.S. forces. The ability of an opponent to negate some of the U.S. military's superiority by operating in a city presents an immediate concern to U.S. military planners.

History has shown that the cost of fighting in urban areas measured in casualties and the duration of the conflict is consistently very high. Despite the cost, urban offensives still succeed more often than not. The demand for quick decisive victory and the historically proven high cost of urban attacks creates a tension. This tension is between the amount of destruction allowed, the amount of acceptable casualties, and the duration of the conflict. This tension is more evident in urban combat because of the presence of civilians. There must be a balance between the level of destruction, the cost, and duration.

To be successful, operational planners must focus the urban attack on the operational objectives. Attacks on urban areas require detailed planning, intelligence collection aimed at the level of defensive preparation, isolation, surprise, and appropriate constraints and restrictions on the force. Correctly applying these factors, the U.S. can achieve victory at a reasonable cost. Without assessing these planning factors all but the most permissive urban battles will take too much time and cost too much. A review of doctrine may help prepare the U.S. Army to meet the challenges of urban warfare.

Current MOUT doctrine is insufficient and inadequate for future urban warfare. Many tactics, techniques and procedures used as the mechanics for fighting in a city remain very similar to those used in Manila. The lessons of the past and the current trends indicate the need for precision MOUT doctrine. This recognition should motivate the U.S. Army to develop new doctrine, training, equipment, and potentially new organizational structures for MOUT. If the U.S. fails to update MOUT doctrine, the U.S. may pay a heavy cost. The U.S. can reduce the costs, but cannot eliminate the costs totally. Technology may provide part of the answer with precision weapons and other nonlethal weapons.

VII - RECOMMENDATIONS

The following are recommendations provided to better prepare the force for future combat in MOUT.

- Update the 1979 version of FM 90-10, MOUT to bring it in line with other current U.S. doctrine.
- Doctrine should include the operational planning considerations discussed in this paper:
 - Focus of the attack remains centered on seizing operational objectives
 - Detailed planning
 - Accurate intelligence
 - Restrictions/constraints
 - Overwhelming superiority
 - Isolation
 - Surprise
 - Doctrine that provides the commander with an understanding of the nature of urban combat
- Doctrine should address the MOUT environment so commanders can understand

the environment of combat and how it affects their plan and their employment of forces.

- The U.S. must continue to study MOUT to leverage technology to help ease the tension between firepower, cost and duration. The focus needs to be on precision fires which are paramount in urban operations.

ENDNOTES

1. Department of the Army, FM 100-5 Operations, (Washington D.C. GPO June 1993) P. 14-1 (Hereafter cited as FM 100-5).
2. Jack W. Klimp, The Battle for Seoul: Marines and MOUT, (Marine Corps Gazette, November 1981) P. 80. (Hereafter cited as Klimp)
3. United States Marine Corps, Operational Handbook 8-7 Military Operations On Urbanized Terrain (MOUT), (Washington D.C., GPO November 1980) P. 1-10. (Hereafter cited as USMC OH 8-7).
4. USMC, OH 8-7, P. 1-2.
5. USMC, OH 8-7, P. 1-2
6. James W. O'connell, Is the United States Prepared to Conduct Military Operations on Urbanized Terrain, (Naval War College Newport R.I. 13 February 1992) P. 3 (Hereafter cited as O'connell).
7. O'connell, P. 14
8. O'connell, P. 4
9. There is very little logistics data on actual urban combat consumption rates for MOUT. A 1972 study conducted by the U.S. Army Infantry School estimated the increased consumption of Class V in urban combat is four times greater than for other combat operations. Combat In Cities Report Volume I-II, (U.S. Army Infantry School, FT Benning GA. 1972) P. 149
10. C.G. Blood and M.E. Anderson, The Battle for Hue: Casualty and Disease Rates During Urban Warfare, (Naval Health Research Center, San Diego CA ,1993) This study analyzed the casualty rates for Marine units fighting the battle for Hue, Vietnam in 1968. A comparison of the high intensity Okinawa landing in WWII was used as a comparison. The study found a three fold increase in casualties suffered by the Marines in Hue and a six fold increase in the highest casualty rate for Marines during the peak of Marine operations in the Vietnam Conflict.
11. FM 100-5, P. 14-1
12. American Defense Preparedness Association, Military Operations In Built-Up Areas, (U.S. Army Human Engineering Laboratory, Aberdeen MD, 1980) P. 2.
13. Kevin T. McEnery, The XIV Corps Battle For Manila, (Command and General Staff College MMAS, FT Leavenworth KS, 1993) P.114 (Hereafter cited as McEnery).
14. O'connell, P. 23
15. There are two contemporary sources for the effectiveness of U.S. weapons in an urban environment. Annex A of FM 90-10-1 An Infantryman's Guide to combat in Built-up Areas, published in 1993, contains current weapons effects in MOUT. A previous study conducted by the Infantry School in 1972 (

Combat In Cities Report Volume III), outlined in detail the effectiveness of weapons in an urban environment.

16. FM 100-5, P.1-2

17. FM 100-5, P.1-3

18. FM 100-5, P. 1-3

19. FM 100-5, P. 14-4

20. Department of the Army, FM 90-10 Military Operations on Urbanized Terrain (MOUT) , (Washington D.C. GPO, August, 1979) P. 1-1 (Hereafter cited as FM 90-10).

21. FM 90-10, P. 2-11

22. FM 90-10, P. 1-10

23. FM 90-10, P. 1-1

24. FM 90-10, P. 1-1

25. The majority of the historical analysis is extracted from McEnery's thesis on The XIV Corps Battle For Manila.

26. McEnery, P. 106

27. R.D. McLaurin, Paul A. Jureidini, David S. McDonald, Modern Experience in City Combat, (U.S. Army Human Engineering Laboratory, Aberdeen Proving Ground, Maryland, March 1987) P.73 (Hereafter cited as Modern Experience in City Combat).

28. McEnery, P. 111

29. McEnery, P. 108

30. Department of the Army, FM 31-50 Combat in Fortified and Built-up Areas , (Washington D.C. GPO, March 1964) P. 32

31. McEnery, P. 73

31. Kevin J. Hammond and Frank Sherman, Sheridans In Panama, (Armor Magazine, March-April 1990) P. 8. (Hereafter, cited as Hammond).

33. "Operation JUST CAUSE Lessons Learned, Volume II Operations", Center For Army Lessons Learned (CALL) 90-9, (U.S. Army Combined Arms Command (CAC), October 1990) P. I-5. (Hereafter cited as CALL 90-9).

34. CALL 90-9, P. I-5.

35. Hammond, P. 12.
36. Thomas Donnelly, Mararet Roth, Caleb Baker, Operation Just Cause, The Storming of Panama, (Lexington Books, New York, 1991) P. 182. (Hereafter, cited as Donnelly-Roth-Baker).
37. Donnelly-Roth-Baker, P. 235. (The Madden Dam is a hydroelectric plant critical to the operation of the canal). There were over 1000 U.S. citizens living on joint U.S. Panamanian military installations. Many of these civilians worked for the Panama Canal Commission.
38. Donnelly-Roth-Baker, P.374.
39. Modern Experience in City Combat, P. 93
40. FM 90-10, P. 2-10
41. FM 100-5, P. 1-3
42. John Dubik, A Guide to Campaign Planning, (Advanced School for Military Studies, FT Leavenworth KS, 1992) P. 7
43. Based on the indepth study of 22 urban battles by the U.S. Army Human Engineering Laboratory. Modern Experience in City Combat. P. 3
44. FM 90-10, P. 1-10

BIBLIOGRAPHY

U.S. GOVERNMENT PUBLICATIONS

Army Science Board, Ad Hoc Group on Military Operations in Built-up Areas, Army Science Board, 1978

Blood, C.G., and Anderson, M.E., The Battle for Hue: Casualties and Disease Rates During Urban Warfare, San Diego, California, Naval Health Research Center, August 1993.

Combat After Action Report, HQ 1st Marine Division (-) (Rein)
20 March 1968.

Combat After Action Report: Operation Hue City, CG TF X-RAY 14,
Republic of Vietnam, April 1968.

Combat in Cities Report Volume I-III, U.S. Army Infantry School, FT Benning
GA, 1972.

Dyer, Jean L., Predictions of Infantry Errors During Training: Pilot Investigation, Alexandria Virginia, U.S. Army Research
Institute for the Behavioral and Social Sciences, January 1982.

International Symposium on Military Operations in Built-up Areas,
U.S. Army Human Engineering Laboratory, 9-10 December 1980.

Introduction to Low Intensity Conflict, Center for Army Lessons
Learned, CALL U.S. Army Combined Arms Command (CAC),
January 1994.

McLaurin, R.D., Military Operations in Urban Antiterrorism, Aberdeen Proving
Ground, MD: U.S. Army Human Engineering Laboratory, October 1989.

McLaurin, R.D., Urban Counterinsurgency: Case Studies and Implications for U.S. Military Forces, Aberdeen Proving Ground, MD: U.S. Army Human
Engineering Laboratory, October 1989.

McLaurin, R.D., Lewis W. Snider, Recent Military Operations on Urban Terrain, Aberdeen Proving Ground, MD: U.S. Army Human Engineering
Laboratory, July 1992.

McLaurin, R.D., Jureidini, Paul A., McDonald, David S., Modern Experience in City Combat, Abbott Associates INC. Aberdeen Proving Ground, MD: U.S. Army Human Engineering Laboratory, March 1987.

National Military Strategy of the United States, Department of Defense, January 1992.

Operation Just Cause Lessons Learned, Volume 1, Soldiers and Leadership, Center for Army Lessons Learned, CALL U.S. Army Combined Army Command (CAC), October 1990.

Pearson, Willard, The War in the Northern Provinces 1966-1968, Vietnam Studies, Department of the Army, 1974.

White Paper - Fire Support for MOUT, U.S. Army Field Artillery School, Fort Sill, OK, 19 August 1987.

U.S. MANUALS

Field Manual 7-98, Operations in a Low-Intensity Conflict, HQ, Department of the Army, October 1992.

Field Manual 31-50, Combat in Fortified and Built-up Areas, HQ, Department of the Army, March 1964.

Field Manual 90-10, Military Operations in Urban Terrain, HQ, Department of the Army, 15 August 1979.

Field Manual 90-10-1, An Infantryman's Guide to Combat in Built-up Areas, HQ, Department of the Army, 12 May 1993.

Field Manual 100-5 Operations, HQ, Department of the Army, 1993.

ST 31-50-171 FY 73, Combat in Built-up Areas Handbook, U.S. Army Infantry School.

United States Marine Corps, Operational Handbook 8-7 Military Operations On Urbanized Terrain (MOUT), Washington D.C., GPO November 1980.

BOOKS

Donnelly, Thomas, Roth, Margaret, Baker Caleb, Operation Just Cause: The Storming of Panama, New York, Lexington Books, 1991.

Flanagan, Edward M., LTC, USA(RET). Battle for Panama - Inside Operation Just Cause, Riverside, NJ: Brassey's McMillan, 1993.

The Marines in Vietnam 1954-1973. An Anthology and Annotated Bibliography, Washington, D.C., History and Museums Division HQ U.S. Marine Corps 1985, pp. 101-103.

McConnell, Malcolm, Just Cause. The Real Story of America's High-Tech Invasion of Panama, Boulder, CO: Westview Press, 1990.

Nolan, Keith W., Battle for HUE. TET 1968. NAVATO, California, Presidio Press, 1983.

Oberdorfer, Don, TET!, New York, Doubleday & Company, 1971.

Pimlott, John, Vietnam - The Decisive Battles, New York, MacMillian Publishing.

Spector, Ronald H., After TET. The Bloodiest Year in Vietnam, New York, Vintage Books, 1993.

Stanton, Shelby L., The Rise and Fall of An American Army. U.S. Ground Forces in Vietnam 1965-1973, Presidio California, Presidio Press, August 1986, pp. 231-239.

ARTICLES AND PREIODICALS

Bell, Raymond, E., Fighting From Fortified Battle Positions, Army July 1979, pp. 34-39.

Boatman, John and Barbara Starr, USA Looks for Answers to the Ugliness of Urban Warfare, Jane's Defense Weekly, 16 October 1993.

- Boyko, Robert G., MAJ, USA., Just Cause MOUT, Infantry Magazine, May-June 1991.
- Bracken, Paul, Urban Sprawl and Nato Defense, Military Review, October 1977, pp. 32-39.
- Burbery, John W., Perspective and Patterns, Military Review, March 1978, pp. 3-10.
- Codo, Enrique Martinez, The Urban Guerilla, Military Review, August 1971.
- Cohen, Eliot A., Constraints on America's Conduct of Small Wars, International Security, 9, Fall 1984.
- DelGrosso, C.S. and Short, John C., A Concept for Antiterrorist Operations, Marine Corps Gazette, June 1979, pp. 54-59.
- DeMario, Andrew F., When Will We Ever Learn?, Armor, September-October 1988, pp. 20-23.
- Desch, Michael C., The Keys That Lock Up The Third World: Identifying American Interests in the Periphery, International Security, 14, Summer 1989.
- Desobry, William R., LTG, USA., Brute Strength, Not Finesse, Infantry Magazine, July - August 1987.
- DeTreux, Kenneth M., Infantry in Low-Intensity Conflict Observations from Operation Just Cause, Marine Corps Gazette, September 1990, pp. 63-68.
- Doss, Jean L., Predictions of Infantry Errors During Training: Pilot Investigation, U.S. Army Research Institute for the Behavioral and Social Sciences, Alexandria VA January 1982.
- Eikenberry, Karl W., LTC, USA, Improving MOUT and Battle Focused Training, Infantry Magazine, May-June 1993.
- Frost, Roger, "Street Smart", Soldiers aspects of terraining for Urban Operations.

- Galvin, John R., Uncomfortable Wars: Towards A New Paradigm, Parameters, Journal of the U.S. Army War College, pp. 2-3.
- Gordon, John, IV, MAJ, USA., Battle in the Streets - Manila 1945, Field Artillery Journal, August 1990, pp. 24-29.
- Hammond, Kevin J., and Sherman, Frank, Sheridans in Panama, Armor, March-April 1990, pp. 8-15.
- Hollis, James B., LTC USA(RET) and Lowery A. West, LTC, USA(RET). Fighting Close Terrain Battles in the Year 2000., Armed Forces Journal International, October 1988.
- Irving, Fredrick F., The Battle for Hue, Military Review, January 1969, pp. 56-63.
- Jesmer, David G., Jr., CPT, USA., Room Clearance in MOUT, Infantry Magazine, May-June 1987.
- Kane, Richard J., Training for the Urban Battle, Infantry, November-December 1988, pp 36-38.
- Klimp, Jack W., The Battle for Seoul: Marines and MOUT, Marine Corps Gazette, November 1981, pp. 79-82.
- Luttwak, Edward N., Just Cause - A Military Score Card, Parameters, U.S. Army War College Quarterly, March 1990, pp. 101-102.
- Mahan, John J., MOUT: The Quiet Imperative, Military Review, July 1984.
- Millett, Stanley, South Vietnam, U.S. - Communist Confrontation in Southeast Asia, Volume 3, 1968, New York Facts on File, Inc., 1993, pp. 33-51.
- Milton, T.R. Jr., Urban Operations: Future War, Military Review, February 1994, pp. 37-46.
- Moore, John, R., Future Warfare May Take the Form of Urban Terrorism, Marine Corps Gazette, June 1979, pp. 49-53

Panton, Jefferson R., Company Team Offensive Operations in Urban Terrain, Armor Magazine, November-December 1993, pp. 21-25.

Peters, Ralph, The Army of the Future, Military Review, September 1987, pp. 36-45.

Schlaak, Thomas M., The Essence of Future Gurrilla Warfare, Marine Corps Gazette, December 1976, pp. 18-26.

Strafer, Kenneth J., A Recapitulation of Contemporary MOUT Techniques, Military Review, February 1981, pp. 48-57.

Sullivan, Bloomer, D., MOUT Training A Combat Service Support Need, Military Review, September 1980, pp. 9-15.

Szafranski, Richard, Thinking About Small Wars, Parameters, U.S. Army War College Quarterly, September 1990, pp. 39-49.

PUBLISHED PAPERS

Buck, B., Battle of Manila: Offensive Deliberate Attack MOUT January - February 1945, U.S. Army Command and General Staff College MMAS, May 1984.

Dzirkals, Lilita, I., Konrad Kellen, and Horst Menderhausen, Military Operations in Built-Up Areas: Essay on Some Past, Present, and Future Aspects, RAND, Santa Monica CA, 1976.

Kennedy, John R., Players or Spectators? Heavy Force Doctrine for MOUT, U.S. Army Command and General Staff College, SAMS Monograph 1st Term AY 89/90.

Kirkland, Donald E., Offensive Operations in Urban Europe: The Need for a "Heavy- Light" Infantry Force U.S. Army Command and General Staff College, SAMS Monograph 1st Term AY 85/86.

Latimer, John C., Considerations for Operations on Urban Terrain by Light Forces, U.S. Army Command and General Staff College, MMAS 1985.

McEnery, Kevin T., The XIV Corps Battle for Manila February 1945, U.S. Army Command and General Staff College, MMAS 1993.